

Application Serial No. 09/499,229
Amendment dated May 27, 2005
Reply to Office Action mailed January 27, 2005

REMARKS/ARGUMENTS

Claims 1-11 are pending. Claims 1-8 are rejected under 35 U.S.C. § 112, first paragraph. Claims 1, 4, 6 and 9 remain rejected under 35 U.S.C. § 103. Claims 1 and 9 have been amended herein. Support for these amendments is found at least at page 9, lines 7-10 and 12-22 and at page 10, lines 7-10 of the specification.

Claim Rejections Under 35 U.S.C. § 112

The Examiner has rejected Claim 1-8 under 35 U.S.C. § 112, first paragraph, as lacking enablement for all cases of generating a fixed exposure period in accordance with the selected exposure information. Applicants have amended Claim 1 to mirror the specification and figure 4, as suggested by the Examiner. Therefore, Applicants believe that Claims 1-8 are sufficiently enabled by the specification to meet the requirements of 35 U.S.C. § 112 and request that the rejection based on lack of enablement be withdrawn.

The Claim Rejections Under 35 U.S.C. § 103 Should Be Withdrawn

The Examiner has maintained the rejection of Claims 1, 4, 6 and 9 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,115,269 (hereinafter "Masanaga") in view of U.S. Patent No. 5,793,422 (hereinafter "Mochizuki").

Claims 1 and 9 have been amended to require a solid state imaging apparatus including a selection circuit for selecting first exposure information generated by the first exposure information generating circuit, incremented or decremented in units of predetermined steps. The claim also requires that the second exposure information generating circuit uses the image signal output from the solid-state image sensor and a predetermined optimum value, when the level of the image signal is within the predetermined range. The claim also requires a timing control circuit for receiving the exposure information selected by the selection circuit and generating a new timing signal that defines a new exposure period in accordance with the selected exposure information.

When the output value of the solid-state image sensor is outside of a predetermined target value (such as when luminous component is outside of the appropriate range), the exposure time

is extended or shortened in steps of predetermined units (e.g. one horizontal scan period). Alternatively, when the output value of the solid-state image sensor closes into a predetermined target value (such as when a luminous component is within the appropriate range), the exposure time is controlled based on the image signal output from the solid-state image sensor and the predetermined optimum value. By selecting the first exposure information or the second exposure information in accordance with the level of the luminous component, the exposure time converges at the optimum value within the appropriate range - even when the luminous component is within the appropriate range. And because the exposure time is extended or shortened in steps of predetermined units, when the luminous component is outside of the appropriate range, a sudden change in an image signal level due to a sudden change of the exposure time is prevented. Accordingly, the image signal in which the luminous component becomes stable is continuously obtained by the claimed solid state image apparatus.

Similarly, Claim 9 is directed to a method for controlling an exposure period of a solid-state imaging apparatus that includes selecting a first exposure information generated by a first exposure information generating circuit, to be incremented or decremented in units of predetermined steps when the level of an image signal is outside of a predetermined range. Generating second exposure information in a second exposure information generating circuit, using the image signal output from the solid-state image sensor. A predetermined optimum value is selected when the level of the image signal is within a predetermined range. A timing signal for setting the exposure is then generated using the preferred exposure information.

Masanaga is directed to a camera that controls the exposure using the luminance of a subject substantially at the central portion of the exposure and the luminance of the background of the exposure. To control the exposure, Masanaga discloses a process of generating an average luminance (A_v) by adding a signal from a large light-receiving region (R) to a signal from a small light-receiving region (R_{sp}) represented by the spot luminance (S_p) of a small region corresponding to the imaged position of the subject of the imaged region. The luminance

difference between the average luminance (A_v) and the spot luminance (S_p) is then calculated (see column 4, lines 1-14 and Figure 1).

But Masanaga does not disclose a timing control circuit that generates a timing signal defining a predetermined exposure period in accordance with the selected exposure information as required by the instant Claim 1. Further, Masanaga does not disclose the generation of a timing signal for setting an exposure period in accordance with selected exposure information as recited by the instant Claim 9. Thus, Masanaga does not disclose the selective generation of two kinds of signals based on first and second exposure information. Rather, Masanaga teaches using the average luminance (A_v) and the spot luminance (S_p) as well as the luminance difference to control the exposure.

Mochizuki is directed to a video camera that includes a comparator for comparing the level of an output signal with a reference level and an exposure time controlling circuit for controlling the exposure time in accordance with the compared output signal (see abstract). However, Mochizuki does not disclose a selection circuit and a timing control circuit as required by Claim 1. Furthermore, Mochizuki does not disclose selection of the first and second exposure information in generating the timing signal as required by Claim 9. Accordingly, Mochizuki does not overcome the deficiencies of Masanaga described above and neither Masanaga nor Mochizuki teach or suggest the use of first and second exposure information to generate a timing signal defining a predetermined exposure period including a first exposure information, generated by a first exposure information generating circuit, incremented or decremented in units of predetermined steps. Therefore, Applicants submit that the combination of references cited by the Examiner does not teach all of the limitations of the instant claims, as amended, and request that the remaining rejections under 35 U.S.C. § 103(a) be withdrawn.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

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Respectfully submitted,

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